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ABSTRACT

In 1971 the South Carolina Commission on Higher Education charged a Special Medical Education Committee to examine the present structure and advise on future development of educational facilities to meet the physician requirements of the state. The committee did an analysis of the present situation of approximately 100 physicians per 100,000 population in relation to the goal of approximately 130 physicians per 100,000 population and recommended ways of achieving this goal. Among the factors discussed are: the cost of educating a doctor; the present situation at the Medical University of South Carolina; the pool of applicants; the cost of a new medical school; the location of a second medical school; coordination of medical education; and graduate medical education. Specific recommendations regarding locations and facilities are enumerated. (JMF)

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MEDICAL EDUCATION IN SOUTH CAROLINA

A REPORT FROM THE SOUTH CAROLINA COMMISSION ON HIGHER EDUCATION

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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COLUMBIA, SOUTH CAROLINA

DECEMBER 1971

SOUTH CAROLINA COMMISSION ON HIGHER EDUCATION
RUTLEDGE BUILDING
1429 SENATE STREET
COLUMBIA, S C 29201

JAMES A. MORRIS
COMMISSIONER

TELEPHONE
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December 3, 1971

TO: His Excellency, Governor John C. West, Chairman, State Budget and Control Board and the Members of the South Carolina General Assembly

In August 1971, the Commission on Higher Education appointed a Special Medical Education Committee and charged it to advise the Commission as to the educational structure that should be developed to meet South Carolina's requirements for physicians. The need for a second medical school was to be considered as well as any other aspects of the training of physicians which the Committee deemed appropriate. The report of the Committee was submitted on December 2. Based on information contained therein, the Commission submits the following for your consideration.

The Commission is in agreement that South Carolina should strive to attain as its goal the national median of 130 doctors per 100,000 population which the Carnegie Commission has projected for the year 1975.

I. The Commission agrees it is desirable that this goal be reached as soon as possible but there appears to be no unanimous agreement that this can be accomplished at the Medical University of South Carolina alone.

II. There is agreement that with or without a second medical school there is presently an urgent need to immediately provide training and teaching facilities at Columbia, Greenville and Spartanburg for undergraduate and graduate students. This is necessary to meet needs generated by recent increases in entering class size at the Medical University of South Carolina.

III. There is agreement that the first step must be the prompt establishment of a strong residency training program in these cities supported by a capable, full time faculty which must be a part of the Medical University faculty and financially supported by the state.

Students should not be sent from the parent institution to a Regional Health Education Center until the Center has demonstrated the capability to offer an acceptable program. The Regional Center program must be equally as good in every respect as that offered at the Medical University and under its direct control and continuing supervision.

Such programs will provide presently needed educational facilities for undergraduate students and resident physicians. In addition, they will substantially form the nucleus of Health Education Centers as suggested by the Carnegie Commission to upgrade the quality of medical care in the regions served. These Centers should also train para-medical personnel such as nurses, mid-wives, laboratory and X-ray technicians as well as physicians' assistants, and would logically serve as major referral centers for their regions. All should be tied into a statewide medical network.

IV. The Commission, however, is not at this time in full agreement that such a system will in itself provide enough educational facilities for the sharp increase in the number of physicians in South Carolina that appears to be necessary to reach the desired goal. It is an accepted standard that there is a need for approximately eight beds per entering medical student in a medical school. It appears that the Medical University at this time does not have the number of beds recommended to educate the class of 1975 when it enters its clinical training program no later than September of 1973. It is for this reason, if no others were needed, that the Commission recommends the above stated program.

Until definite and satisfactory long-term agreements are confirmed between the Medical University and Roper and St. Francis Hospitals in Charleston a majority of the Commission recommends that the number of students accepted in the first year classes at the Medical University be limited to the ability of the Medical University to provide the necessary number of teaching beds under its control in Charleston and in the Regional Health Education Centers.

At the present time this number cannot be determined with any degree of accuracy. It appears that it will take at least several months before the Medical University can complete the necessary agreements with all hospitals involved. It is only after the number of teaching beds are firmly agreed to that a realistic estimate of the maximum number of entering students can be made. After this has been done, an answer can then be provided as to the need of a second medical school.

If in the opinion of the Commission, after a reasonable period of time it is determined that the program outlined herein will not meet the medical needs of South Carolina, consideration of a second medical school will be reopened.

V. Under any circumstances it would appear wise for the state to provide a medical education supervisory mechanism ideally under the Commission on Higher Education to insure that monies appropriated for all medical education are wisely spent and to prevent costly competition for scarce tax dollars.

VI. An appropriate state agency should immediately be given responsibility to evaluate and analyze the numbers, kinds and distribution of doctors necessary to the well-being of the people of South Carolina.

This agency should create an in-depth data bank of doctors currently practicing and doctors currently in residencies; the state should make every effort to retain these residents in the state of South Carolina. In addition, the agency should analyze those factors which attract residents, and the state should make every effort to increase the immigration of physicians as residents,

This agency should also study the new developments in delivery of health services and should continually relate these activities to their accomplishments in meeting the needs of the people of South Carolina for health care services. Whether or not the state will reach the desired goal will depend to a large extent on Federal decisions concerning medical care and medical education, and the extent to which Federal funds are made available.

VII. The Commission is very aware of the fact that there are many other educational, social and governmental needs competing for what appears to be limited tax resources. It is true, however, that a body politic can find the resources to accomplish those goals that its citizens are convinced are necessary for its survival and well being.

It was a primary objective of the Committee to compile data that would be of assistance to the members of the General Assembly and others concerned with the problem of providing an adequate number of physicians for South

Carolina. The Committee was most successful in achieving this objective, and those portions of the report presenting data are reproduced as submitted and forwarded herewith for your information.

Yours sincerely,

James A. Morris

ljw

Enclosures

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APPENDIX

"Graduate Medical Education" Health Care Headlines, Number 10, October 1971, South Carolina Hospital Association.

Introduction

The Special Medical Education Committee was appointed in mid-August, 1971 by the Commission on Higher Education. Commissioner James A. Morris gave the following charge to the Committee:

"....to advise the Commission as to the educational structure that should be developed to meet South Carolina's requirements for physicians. The need for a second medical school should be considered, as well as any other aspects of the training of physicians which (the Committee) deems appropriate. October 1 is the target date for submission of your report."

Original members include the following:

Dr. E. Kenneth Aycock
Dr. John P. Booker
Mr. John K. Cauthen
Dr. Dana Mitchell, Jr.
Mr. Henry Savage, Jr.
Mr. James C. Self
Mr. J. Edwin Schachte, Jr.
Dr. R. Cathcart Smith, Chairman
Mr. Robert E. Toomey
Dr. Hugh H. Wells

Due to frequent absences of Dr. Aycock on official matters, Dr. Malcolm U. Dantzler was added.

The Committee met initially on August 19, and thereafter every two weeks with one exception. Representatives including the Presidents were heard from Clemson University, Medical University of South Carolina, University of South Carolina, and civic groups from Columbia and Charleston. Dr. George T. Harrell, Dean of the Pennsylvania State University College of Medicine, appeared before the Committee. On two occasions members held lengthy conversations by telephone with Dr. Chevis M. Smythe, Dean of the University of Texas Medical School at Houston, and reported these conversations to the Committee. Dr. Vernon W. Lippard was contacted by telephone, and he in essence confirmed the recommendations included in the report of

his committee submitted in 1967. Numerous other telephone conversations were held with officials of the American Medical Association and the American Association of Medical Colleges. The members were plentifully provided with written material, most of it pertinent and useful. Undoubtedly there are written sources of information and knowledgeable people not consulted by the Committee, but members are satisfied that within the time allowed, their investigation provided an adequate basis for the report presented here.

On November 17, the Committee reviewed the report in final form and all members present concurred in principle. All members were provided copies in advance of the meeting and invited to submit comments; none were received and the concurrence of absentees is presumed.

The Present Physician Situation

The number of physicians per 100,000 population in South Carolina is well below national rates. No matter what is included in the computations, the state can do no better than rank 46 out of 50 states. The following are 1969 rates, the latest available. (1)

All rates are per 100,000 population -

1. Rates including active federal and non-federal Medical Doctors and Doctors of Osteopathy, active and inactive:

National average rate - 164
National median rate - 140
South Carolina rate - 100 (tied for 46 out of 50)

2. Rates including active federal and non-federal MD's and DO's (excluding inactive):

National average - 154
National median - 132
South Carolina rate - 94 (tied for 46 out of 50)

3. Rates including active non-federal MD's and DO's (excluding federal and inactive):

National average - 141
National median - 113
South Carolina rate - 81 (47 out of 50)

Over the years the numbers of physicians per 100,000 in South Carolina has been significantly lower than the national average. (2)

TABLE 1

Physician Rates Including Active and Inactive
(Federal physicians included through 1942)

	South Carolina	Nation
1931	73	128
1936	75	132
1940	74	137
1942	72	139
1949	74	131
1955	77	129
1960	78	137
1965	84	142

The problem within the State is even more acute. Table 2 shows the distribution of MD's in South Carolina in 1971, indicating on an average one doctor for each 1074 citizens. Yet only five counties meet this average, and half of the counties must depend on one doctor for 2148 (twice the average) or more of its citizens. An inspection of the per capita income column and the percent urban column reveals a striking correlation between the percent urban, wealth, and doctor population.

The distribution of physicians presents problems but the Committee believes the shortage of physicians is serious. Distribution problems will remain with any level of physicians, but they may become less important as the rate increases.

The mix of specialist physicians is also a serious problem. From 1969 to 1970 there was a net increase of one hundred and eleven (111) physicians in the doctor population. The net increase by Specialty was as follows: (3)

Medicine and medical specialists	34
Surgery and surgical specialists	51
Other specialists	25
General practice	1
TOTAL	111

If we assume that the greatest need is for family practice our most recent additions while representing a 5.7% increase did little or nothing to resolve the problem.

TABLE 2

Active Federal and Non-Federal M.D.'s

by South Carolina Counties

July, 1971

		Per Capita Income (1969)	Number of M.D.'s (1971)	(1970) Population	% Rural (1970)	Number of People Per M.D.
1.	Abbeville	$ 2674 (14)	8 (36)	21,112 (35)	74 (16)	2639(16)
2.	Aiken	3749 (2)	46 (12)	91,023 (6)	55 (37)	1979(25)
3.	Allendale	2446 (23)	3 (43)	9,692 (45)	63 (25)	3231(9)
4.	Anderson	2826 (12)	91 (5)	105,474 (5)	59 (32)	1159(39)
5.	Bamberg	1927 (38)	10 (30)	15,950 (39)	56 (35)	1595(32)
6.	Barnwell	2459 (22)	9 (33)	17,176 (38)	59 (32)	1908(26)
7.	Beaufort	3992 (1)	38 (13)	51,136 (16)	50 (41)	1346(35)
8.	Berkeley	2854 (10)	9 (33)	56,199 (14)	54 (38)	6244(1)
9.	Calhoun	2137 (32)	3 (43)	10,780 (44)	100 (1)	3593(6)
10.	Charleston	2854 (10)	556 (1)	247,650 (1)	18 (45)	445(46)
11.	Cherokee	2336 (26)	14 (25)	36,791 (21)	54 (38)	2628(17)
12.	Chester	2669 (15)	12 (27)	29,811 (28)	67 (21)	2484(18)
13.	Chesterfield	2130 (33)	14 (25)	33,667 (24)	86 (7)	2405(19)
14.	Clarendon	1523 (44)	8 (36)	25,604 (34)	84 (8)	3201(11)
15.	Colleton	2187 (30)	12 (27)	27,622 (32)	77 (14)	2302(21)
16.	Darlington	2398 (24)	24 (18)	53,442 (15)	72 (17)	2227(22)
17.	Dillon	1733 (41)	10 (30)	28,838 (31)	79 (13)	2884(14)
18.	Dorchester	1646 (42)	10 (30)	32,276 (26)	88 (6)	3228(10)
19.	Edgefield	1962 (37)	5 (41)	15,692 (41)	66 (22)	3138(12)
20.	Fairfield	1893 (39)	6 (39)	19,999 (36)	83 (9)	3333(7)
21.	Florence	2576 (20)	78 (6)	89,636 (7)	64 (24)	1149(40)
22.	Georgetown	2111 (34)	21 (20)	33,500 (25)	60 (31)	1595(32)
23.	Greenville	3183 (4)	265 (3)	240,546 (2)	30 (44)	908(43)
24.	Greenwood	3309 (3)	61 (9)	49,686 (18)	58 (34)	815(44)
25.	Hampton	2292 (28)	8 (36)	15,878 (40)	82 (10)	1985(24)

(continued on next page)

Table 2 continued ...

	Per Capita Income (1969)	Number of M.D.'s (1971)	(1970) Population	% Rural (1970)	Number of People Per M.D.
26. Horry	$ 2255 (29)	64 (8)	69,992 (11)	71 (18)	1094 (41)
27. Jasper	1515 (45)	2 (45)	11,885 (43)	100 (1)	5943 (2)
28. Kershaw	3054 (7)	29 (15)	34,727 (22)	75 (15)	1197 (37)
29. Lancaster	2622 (18)	20 (22)	43,328 (19)	66 (22)	2166 (23)
30. Laurens	2660 (16)	21 (20)	49,713 (17)	62 (29)	2367 (20)
31. Lee	1422 (46)	6 (39)	18,323 (37)	81 (11)	3054 (13)
32. Lexington	3036 (8)	24 (18)	89,012 (8)	47 (42)	3709 (4)
33. Marion	2049 (35)	25 (16)	30,270 (27)	56 (35)	1211 (36)
34. Marlboro	2351 (25)	15 (24)	27,151 (33)	63 (25)	1810 (29)
35. McCormick	1785 (40)	2 (45)	7,955 (46)	100 (1)	3978 (3)
36. Newberry	2466 (21)	16 (23)	29,273 (29)	68 (20)	1830 (28)
37. Oconee	2783 (13)	25 (16)	40,728 (20)	70 (19)	1629 (30)
38. Orangeburg	2162 (31)	49 (11)	69,789 (12)	81 (11)	1424 (34)
39. Pickens	3183 (4)	31 (14)	58,956 (13)	62 (29)	1902 (27)
40. Richland	3036 (8)	443 (2)	233,868 (3)	15 (46)	528 (45)
41. Saluda	2023 (36)	4 (42)	14,528 (42)	97 (4)	3632 (5)
42. Spartanburg	3118 (6)	171 (4)	173,724 (4)	63 (25)	1016 (42)
43. Sumter	2322 (27)	68 (7)	79,425 (10)	52 (40)	1168 (38)
44. Union	2635 (17)	9 (33)	29,230 (30)	63 (25)	3248 (8)
45. Williamsburg	1571 (43)	12 (27)	34,243 (23)	90 (5)	2854 (15)
46. York	2611 (19)	53 (10)	85,216 (9)	45 (43)	1608 (31)
STATEWIDE	$ 2737	2411	2,590,516	53	1074

(Figures in parentheses indicate rank in column.)

Sources: Population: Division of Research and Statistical Services, State Budget and Control Board

M.D.'s: South Carolina State Board of Health

Per Capita Income: Bureau of Business and Economic Research University of South Carolina

Judging from the year of graduation from medical school, the age of South Carolina's physician population shows no marked difference from that of the national physician population. In 1967, in South Carolina, 62.8 percent had graduated since 1944; nationally 61.3 percent.

TABLE 3A

Physicians (Federal and Non-Federal, Including Inactive) by Year of Graduation From Medical School, December 31, 1967 (4)

Year of Graduation	U. S.	S. C.
Total Graduates	309,483	2473
Prior 1915	2.5%	3.1%
1915-19	1.9	1.8
1920-24	3.1	2.5
1925-29	4.8	4.0
1930-34	6.7	5.8
1935-39	8.7	7.7
1940-44	10.5	11.6
1945-49	10.0	10.3
1950-54	12.2	13.1
1955-59	14.2	15.2
1960-64	16.4	15.3
1965-67	8.5	8.9

Table 3B shows the actual age distribution of South Carolina's active non-federal physicians in 1971. The average age was 49.5 years.

TABLE 3B

South Carolina Physicians (Non-Federal Active) by Year of Birth (Excludes Interns and Residents)

Year of Birth	Number
Prior - 1889	23
1890 - 1894	37
1895 - 1899	50
1900 - 1904	87
1905 - 1909	130
1910 - 1914	167
1915 - 1919	247
1920 - 1924	328
1925 - 1929	336
1930 - 1934	335
1935 - 1939	221
1940 - 1944	69
Total	2041

The demand for health care services, including physicians, will increase in the future. More people are demanding services and anticipating that medical science will improve length and quality of life. Financial constraints on patient care are diminishing as a result of Medicare, Medicaid and widespread health insurance plans, and will virtually disappear if some form of national health insurance is developed.

The Goal

The national median rate of physicians per 100,000 population has been selected by the Committee as a goal for South Carolina. The five largest states in population -- California, New York, Pennsylvania, Illinois and Ohio -- have nearly 45 percent of the physicians but only 35 percent of the population. These super-rich states pull up the national average rate to the point where less than 25 percent of the states meet or exceed the national average. South Carolina stands near the bottom in physician rates and fourth from the bottom in per capita income. It is pragmatic and realistic for South Carolina to strive to reach the middle rather than the top quarter.

The Committee excludes federal and inactive physicians from the rate, and includes active non-federal MD's and DO's. Federal physicians care for a significant portion of the state's population, but predicting the future of the federal physician population is highly speculative, since future numbers will depend primarily on political considerations. The contribution of inactive physicians is impossible to equate to active physicians, and is probably negligible in South Carolina. Numberwise, osteopaths are insignificant in South Carolina, but nationally they account for about 6 physicians per 100,000 population and are regarded as effective contributors of health services. To exclude them from the national median rate would understate the requirement for South Carolina.

As indicated before, in 1969 the national median rate for active non-federal MD's and DO's was 113. What is it likely to be in the future? The Carnegie Commission Report, Trends and Projections of Physicians in the United

States 1967-2002, [1] establishes a national rate for active physicians of 155 per 100,000 for 1969 and estimates that rates by 1975 will range between 164 and 180, or increases over 1969 ranging from 5.8 percent to 16.1 percent. Applying these percentages to a rate of 113 projects ranges from 120 to 131. The Committee notes that the national median is a desirable goal and believes the upper range would be most appropriate. A goal of 130 active non-federal physicians (MD's and DO's) is selected, noting that it is derived from a national projection for 1975.

Population estimates for the state include 2,900,000 for 1980; 3,250,000 for 1990; 3,640,000 for 2000.[2] Employing a rate of 130 physicians per 100,000 projects the following requirements for physicians.

1980 - 3770
1985 - 3998
1990 - 4225
2000 - 4732

In 1970 South Carolina had 2188 active MD's and 6 active DO's.[3] In terms of achieving a rate of 130 physicians, the goal may be stated as providing an additional 1804 physicians by 1985 or 2538 by 2000, plus physicians to replace those lost by attrition. How can these be expressed in terms of medical school graduates?

It is virtually impossible to calculate at long range the effects all the influences which we can now foresee will have on the number of physicians in South Carolina in 1985 or 2000. Some of these influences are the anticipated improvements in graduate education in community hospitals; ancillary assistance and mechanical aids to practice; retirement plans and reduced working hours; improvements in the prevention of disease and injury; improved pre-medical school education; and increased demands associated with an improved economy and third party coverage.

However, the best estimate which the Committee can make at this time is based on the experience of recent years which has been as follows:

1. Approximately sixty percent of the physicians in South Carolina

have been graduates of the Medical University of South Carolina, 40 percent being graduates of out-of-state schools.(4)

2. Approximately sixty percent of the graduates of MUSC have located in South Carolina.(5)

3. Three percent of the active non-federal physicians in the state leave the active roles annually.(6)

Assume the following:

1. For the period 1970-1985 the active non-federal physician population in the state will average 3000. With attrition at 3 percent, 90 will drop from the roles annually, a total of 1350 during the period. For 1970-2000, the average physician population will be 3500, attrition 105 annually, or 3150 for the period.

2. All students currently enrolled at MUSC will graduate in four years. There will be 92 graduates in 1972; 120 in 1973 and in 1974; 165 in 1975. Combined with 76 graduates in 1971, during the period 1971-1975, there will be a total of 573 graduates from MUSC.

The following reflects these assumptions:

	1985		2000
1.	3998	Total MD's required	4732
2.	2194	Available, 1970	2194
3.	1804	Additional required - expansion	2538
4.	1350	Additional required - attrition	3150
5.	3154	Total additional required	5688
6.	1262	Immigrate from other states (40% of 5.)	2275
7.	1892	Additional from S. C.	3413
8.	3153	Graduates required with 60% locating in S. C.	5690
9.	573	Graduates through 1975	573
10.	2580	Graduates required beginning 1976	5117
11.	258	Graduates required annually beginning 1976	205

To graduate a class of a determined size, how large should an entering class be to compensate for attrition? Nationally the drop-out rate

in medical schools has fallen from a high of 13.7 percent in 1961 to 6.7 percent in 1966.(7) A Carnegie Commission report assumes future attrition will be 5 percent.(8) For the period of the past five years attrition at MUSC has been 1.7 percent;(9) it is the institution's goal to achieve zero attrition.(10) The Committee suggests allowing five percent for attrition, translating 258 graduates to 272 entering students; 205 to 216 entering students.

Decisions made now will not be reflected in number of graduates before 1976 at the earliest. For example a decision to take in 272 entering students at MUSC in Fall 1972 would give reasonable assurance of reaching the goal of 130 physicians by 1985. An entering class of 216 would give assurance for the year 2000.

Assume a decision to create a second medical school with classes of 96 as suggested by U.S.C. At the same time, MUSC will maintain an entering level of 165 to produce 157 graduates annually from 1976 to 1985.

The second medical school could expand as follows:

	Entering Class	Graduates
1972	0	0
73	0	0
74	0	0
75	34	0
76	67	0
77	101	0
78	101	0
79	101	32
80	101	64
81	101	96
82	101	96
83	101	96
84	101	96
85	101	96
		576

This second medical school would graduate 576 by 1985, which added to 1,570 graduated by MUSC between 1976 and 1985, would produce a total of 2146 graduates against a requirement for 2580. The shortage of 434 graduates could be eliminated by graduating 62 additional annually from the new school,

by increasing MUSC annual output by 44, or through a combination of the two. Or with outputs of 157 and 96, in two more years - by 1987 - 506 graduates would be added, and the state would be at or close to the rate of 130.

Before 1985, the situation should be reassessed to determine appropriate sizes for entering classes.

If a second medical school were created and expanded as indicated above, by the year 2000 the school would have produced 2112 graduates. With this output from a second school, to reach the goal of 130 by the year 2000, MUSC would have to graduate 120 beginning in 1976 by admitting classes of 127 beginning in 1972.

The Cost of Educating a Doctor

The Carnegie Commission report, Higher Education and the Nation's Health, compared expenditures of state tax funds on medical education per $100,000 of personal income with the per capita income for 48 states (expenditures were the average for 1965 and 1966). South Carolina ranked 8 in expenditures and 46 in per capita income. The difference in the rating in per capita income and in expenditures was +38, the same as Mississippi and exceeded by only three other states. This indicated the relative high expenditure of state tax funds on medical education in relation to per capita income in South Carolina.(1) The reliance on state tax funds in South Carolina contrasts sharply with many other states which are obtaining more private and federal funds.

The Committee attempted to come to grips with a realistic estimate for operating costs per medical student. It noted that the Louisiana State System estimates that costs are approximately $15,000 annually per undergraduate student.(2) The University of South Carolina estimates costs will run between $13,000 to $15,000 in temporary and permanent sites.(3) In testimony before the Committee, Dr. Harrell suggested a figure of $12-$15,000 per student per year, but pointed out the problem in deriving accurate costs.(4) Dr. McCord estimates he can educate additional medical students at $7,000-$8,000 each for

operations; this apparently refers to state appropriation.(5) The S. C. Commission on Higher Education reports that in 1969 the state appropriation for academic costs per FTE student at MUSC was $9767, for 867 FTE students (excludes interns and residents) including 366 undergraduate students in medicine.(6) This is for the state appropriation, and does not include all costs. The student count includes nurses, pharmacists and other non-medical students whose educational costs are considerably less than those of a medical student.

MUSC has received a grant of $18,000 from the National Institutes of Health to develop a system for allocating costs in a medical school. Other medical schools have received similar grants, and all, including MUSC, are to work in unison to produce an acceptable system. This project reflects the frustration of federal agencies in attempting to determine costs and underscores the difficulty for this Committee. The federally funded project began September 1, 1971, and reports are due in one year.

The Committee can only report that $15,000 appears to be an upper limit, and that estimates of $7,000-$8,000 must be viewed with caution.

The Situation at the Medical University

The Committee examined the role of the Medical University in light of statements by their officials that, given adequate support, MUSC could alone provide adequate doctors for the state. Entering classes of 165 and possibly 200 and 250 are suggested. Of particular concern to the Committee was the availability of teaching beds and adequate facilities.

Teaching Beds

The sizes of the entering classes at MUSC for the last ten years are as follows: (1)

1962	80	1967	82
1963	80	1968	92
1964	82	1969	120
1965	82	1970	120
1966	82	1971	165

In Fall, 1970, the average size of the entering classes in 89 institutions enrolling four classes was 120, the median 114. Forty-six institutions had entering classes of 100 to 150; 6 had classes of 150 to 200; and 7 had classes over 200.(2)

Review of official guidelines published by the Liaison Committee on Medical Education fails to reveal any specific guides as to class size.(3) The pre-clinical years present no grave problem in terms of the number of students that can be handled, but the clinical years present a different situation. A rough rule of thumb for clinical facilities is at least four beds in a teaching hospital for each undergraduate student in the clinical years, although increased emphasis on ambulatory care could influence application.(4) For classes of 165, this rule of thumb would indicate a requirement for 1320 teaching beds. In 1970-71 MUSC had three hospitals available--its own, the Veterans Administration, and the Charleston County Hospital.

1. The MUSC hospital has a capacity of 455 beds plus 32 bassinets.(5)

2. The VA Hospital has a capacity of 498 beds, but is limited to a census of 314 as its share of budgeted beds in VA hospitals; the allocation is made by the President's Office of Management and Budget and officials in Charleston plan to seek authority to fill all beds. All beds in the VA Hospital are available for teaching. (6)

3. Charleston County Hospital has 161 beds available for teaching but 36 are for tuberculosis patients with comparatively long term care requirements.(7)

By 1974-75, MUSC projects 568 beds (plus 32 bassinets) in the MUSC hospital; 420 in the VA Hospital; and 161 (including 36 for tuberculosis) in the Charleston County Hospital. (8) MUSC officials believe that firm commitments can be obtained when the need arises to utilize St. Francis (400 + beds) and Roper (400 + beds) Hospitals. (9)

The teaching bed situation is shown below:

Analysis of Students in Third and Fourth (clinical) Years of Medical School in Charleston and Available Beds and Bed Requirements

Year	Number of Students	Available Beds	Beds Required
1971-72	212	930*	848
1972-73	240	930*	960
1973-74	285	930*	1140
1974-75	330	1149*	1320

* Does not consider St. Francis and Roper.

Of interest is the limited use of the Medical University hospital for patients outside the Charleston area. Illustration I shows admissions for one year; 48 percent were from Charleston County, 65 percent from Charleston and contiguous counties.

To make the question of clinical facilities even more acute, MUSC has the largest intern/residency program in the state, this year supporting its greatest number ever - 223.(10) These also require teaching beds. For example, The Essentials of an Approved Internship, published by the AMA, suggests 15 to 25 beds per intern. (11)

The Class of 1975 at MUSC was programmed for 120, but in Summer 1971, MUSC admitted 45 additional students, accelerating the projected pattern of expansion and possibly creating serious problems in providing adequate educational support. MUSC recognizes that to maintain classes of 165, some additional hospital facilities must be developed. As discussed subsequently in this report, a new clinical science building is critical. Minimum additional operating funds must be available. MUSC must develop the managerial capability to effectively initiate and sustain a relatively complex off-campus training plan. For all of these reasons, the Committee must concern itself with the question of size of enrollment of first year medical students at MUSC, in the future.

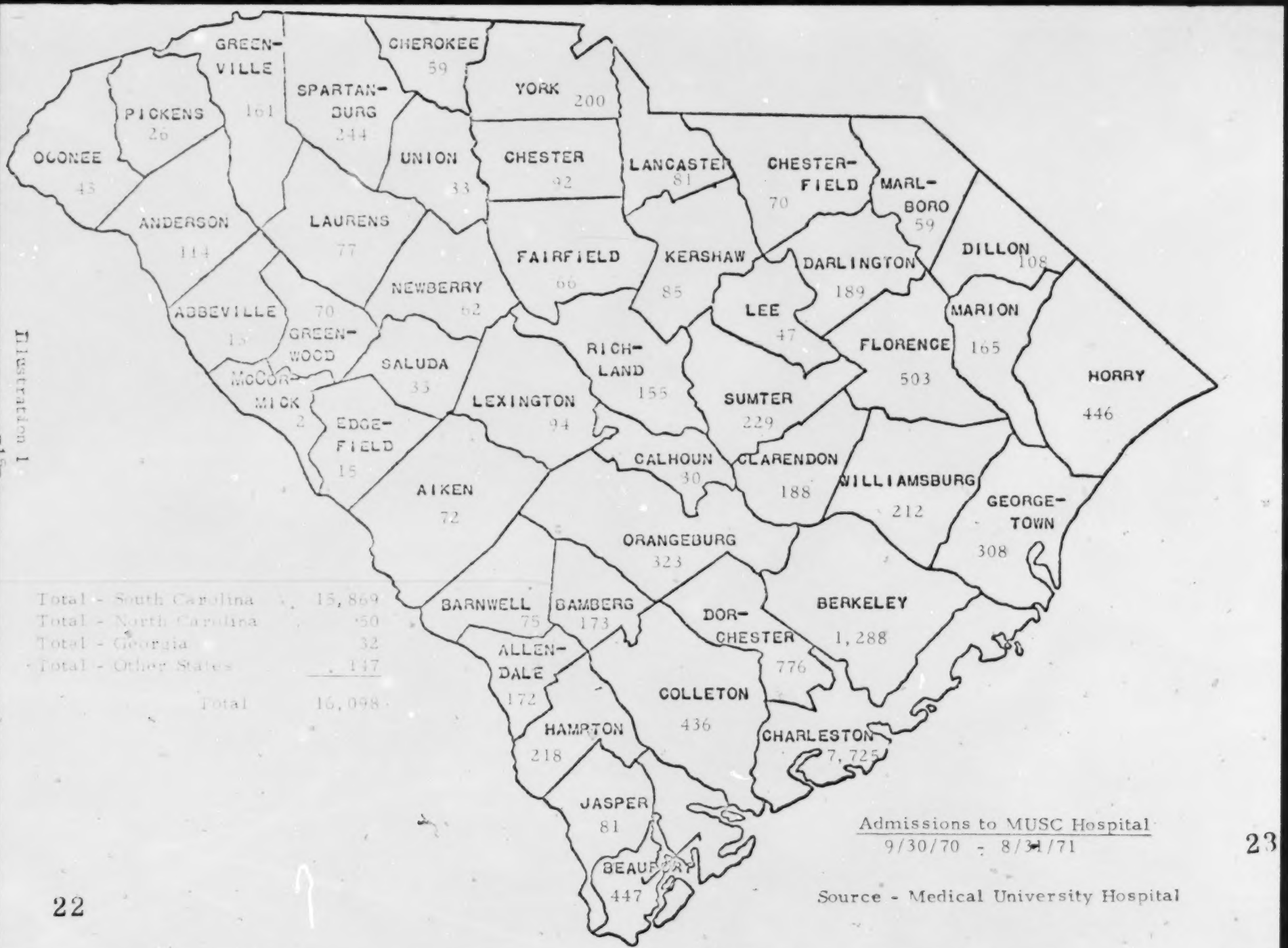


Illustration 1

Total - South Carolina	15,869
Total - North Carolina	50
Total - Georgia	32
Total - Other States	147
Total	16,098

Admissions to MUSC Hospital
9/30/70 - 8/31/71

Source - Medical University Hospital

The Committee notes the Class of 1975 at MUSC includes 165 members and strongly urges that no matter what future developments may occur, that every necessary opportunity be extended to all members for adequate training.

Capital Improvements at MUSC

In 1967 Lippard reported that $6.5 million had been made available from state sources for new buildings at MUSC.

"Unfortunately, construction of these buildings (basic science/dentistry, library/administration) will not alone provide all the facilities needed for a modern medical center with the broad responsibilities for instruction in medicine and the several other health professions which this institution has assumed. The Medical College Hospital, erected in 1955, was apparently designed as a community hospital and is deficient in many of the highly specialized diagnostic and therapeutic facilities that one expects to find in a medical center to which patients with complicated problems are referred from community hospitals in the surrounding region. The research laboratory building, opened in 1962, is not adequate for a faculty of the size that will be necessary for a larger enrollment of students. Additional space is needed for care of ambulatory patients and offices of faculty members in clinical departments. Provisions should also be made for the Schools of Nursing, Pharmacy and Allied Health Professions, psychiatric and rehabilitation services and for parking.

The existence of these needs in an established institution is an important consideration in determining the capacity of the State to open another medical school. They should be taken care of first."(12)

Since the preparation of the Lippard report, the state has provided an additional $3.96 million, including $1.7 million toward a parking facility, $1.7 million toward a clinical science building, $0.5 million toward a rehabilitation wing in the hospital, and $0.1 million to relocate the animal research

facility.(13) Hospital deficiencies referred to above have been largely corrected.

In Fall, 1970, consultants submitted a plan to MUSC for physical plant development through 1985, to accomodate 2600 students including 560 undergraduates and 160 post-graduates in the College of Medicine.(14) This proposal recommended construction of the following:

1. Two clinical science buildings (subsequently changed to one by MUSC)
2. Second basic science building
3. Facility for Nursing/Allied Health
4. Student center
5. Library addition
6. Facility for plant maintenance
7. Student residence
8. Eye Institute (financed privately)
9. Auditorium
10. Parking garages

Total cost for new construction was estimated at approximately $80 million.

In addition, alterations were recommended for seven facilities, including the hospital, at a cost of approximately $6.7 million.

The Commission on Higher Education's Long Range Planning Committee on Facilities reported that the student residence and parking garages should be self-liquidating, and that a need for an auditorium could not be supported at this time. It noted the Eye Institute would be privately financed. The Committee on Facilities recommended support for the other new facilities and for the alterations. (15)

The provision of a new clinical science building is critical to the future of MUSC. Without it the quality of instruction is likely to deteriorate

to a point where the ability of the University to carry out its mission will be severely and adversely affected. This requirement exists even without significant expansion of student body. MUSC has applied for $13 million in federal funds, and the Committee recommends favorable consideration of the request submitted by MUSC for $5 million additional state funds for this facility.(16)

At this time the importance of the other capital improvements is relatively much less than that of the clinical science building. The need for those which are associated with training medical students has not been demonstrated to the Committee nor stressed by officials of MUSC. However, if MUSC were to expand to meet the total need of the state for medical school graduates, it seems logical to expect other requirements to become critical. Additional costs for alterations ($6.7 million), basic science building (consultants' estimate - $28.5 million) and library addition (consultants' estimate - $1.4 million) could be anticipated as a minimum.

The Consortium Plan

MUSC is examining a plan to develop the capability to handle undergraduate clinical teaching in hospitals located in communities throughout the state. Initially, planning is underway with the Richland Memorial Hospital, the Greenville Hospital System, and Spartanburg General Hospital. In each case, a full time director of medical education and full time faculty would be added, and up to twenty senior medical students would physically move to each community hospital for the final year of training. A consultant has been retained by the four organizations to develop a detailed plan. Costs are tentatively estimated at this time by the Dean, College of Medicine, MUSC, as follows per year at each site.(17)

Full-time Director of Medical Education	$ 50,000
Six Geographic Full-time Chiefs of Service at $30,000	180,000
Student subsidy at $1,000	20,000
Travel, miscellaneous consultants, etc.	5,000
Secretarial services, supplies, etc.	25,000
	$280,000

The total annual cost of three sites would be $840,000. The Committee believes there may be other costs incurred by the community hospital such as expenses for library expansion and acquisition of specialized equipment.

The advantages are significant. Clinical material not available in Charleston is made available for student training, and by drawing on resources throughout the state, MUSC can greatly expand the clinical base. The presence and the services of MUSC are extended and the concept of serving the entire state can become more of a reality. This plan would be a substantial step toward meeting the recommendations of the Carnegie Report which recommended the development of area health education centers in Columbia and Greenville. The Committee believes the proposed plan has merit provided the training offered students at the community hospitals is equal to that offered on-campus at MUSC. Problems that must be addressed include:

1. Obtaining firm long-term commitments from participating hospitals.
2. Developing a suitable mix of specialities at participating hospitals.
3. Acquiring adequate faculty, all of whom must be members of the MUSC faculty.
4. Providing adequate academic facilities including libraries.
5. Providing adequate compensation for the increased cost to the student.
6. Devising an equitable method for selecting students to meet quotas at community hospitals.

The Committee endorses the concept of regionalizing undergraduate clinical training but no recommendation can be submitted until a detailed plan is available for review.

Another facet of the Consortium Plan is the speed-up "track" whereby a high school student can complete all requirements for bachelor's and medical degrees in five years. The Committee believes this offers only limited possibilities for increasing the number of medical graduates. It will attract only a small number of highly motivated and unusually able students. The program

has been tried before and has not produced any spectacular results.

The five-year program should be encouraged to accommodate the exceptional student and to stimulate interest in medical education on campuses other than MUSC. Regardless of the number entering the program, the output at the end will depend on the number of teaching beds available to MUSC.

The Pool of Medical School Applicants

At the national level there is no evidence of concern about future adequacy of applicants for medical school. The Carnegie Report, Higher Education and the Nation's Health, recommends a 50 percent expansion within this decade of the number of medical students enrolled in 1970.(1) The Council on Health Manpower of the AMA issued the following statement in December, 1969:

> "In March, 1968, a joint statement by the American Medical Association and the Association of American Medical Colleges urged the expansion of existing medical schools and establishment of new ones, and specifically recommended expanded enrollment in existing schools to permit acceptance of all qualified applicants; attempt to reduce drop-out rates; increased construction of the schools; curricula improvements to decrease the duration but not the quality of medical education and permit entry into medical schools at different levels; increased private and public financial support for construction, expansion, and renovation; and intensified recruitment of faculty. The Council commends the progress to date but believes significant further acceleration of effort is needed if physician production is to keep pace with projected increases and demands over the next decade."(2)

Recommendations for the expansion of medical school enrollment issued by knowledgeable bodies such as these are clear evidence that nationally there

is an apparent belief that applicants will be adequate to support expansion.

MUSC reports the following data on applicants for the College of Medicine:

"Mark Index" is an average of all undergraduate grades: 40-A; 30-B; 20-C; 10-D; MCAT is the Medical College Admission Test consisting of four parts each with a maximum of 800 points; Verbal Ability, Quantitative Ability, General Information and Science.

Year	Total Application(1)	Accepted - In State	Accepted - Out-State	Mark Index Mean	Mark Index Range	MCAT Mean	MCAT Range
1971-72	708(298) (2)	157	5	30.3	21-39	2113	1550-2770
1970-71	625(230) (2)	104	16	29.3	22-39	2155	1720-2690
1969-70	533	113	7	29.0	20-39	2146	1640-2630
1968-69	481	88	4	29.8	23-39	2114	1740-2490
1967-68	380	74	8	29.0	22-38	2058	1520-2490
1966-67	389	75	7	29.9	22-39	2063	1630-2750

(1) Includes students who submitted applications to more than one school.

(2) Applications from South Carolinians.

The numbers of applications per accepted student are as follows: 1966-4.7; 1967-4.6; 1968-5.2; 1969-4.4; 1970-5.2; 1971-4.3. On the whole the Mark Index and the MCAT have shown steady improvement. In 1969 and 1971 the lower ranges of the scores dropped, presumably to accommodate the larger entering classes for those two years, but in 1970 the lower range rose significantly, despite an intake equal to 1969.

The data which follows pertaining to South Carolina was compiled by the AMA.(4)

		1969	1970
1.	Total entering medical students	145 (111-MUSC)	175 (104-MUSC)
	Rank	24	21
2.	Entering students per 100,000 population	5.4 (Revised 5.6)	6.8
	Rank	17 (Revised - 14 est.)	8
	National average rate per 100,000	5.0	5.4
3.	Total population (thousands)	2669 (Revised-2570)	2591
	Rank	26 (Revised-26)	26
4.	Entering students per 1000 bachelor degrees	23.3	25.0

	Rank	6	3
	National average rate per 1000 degrees	16.1	14.0
5.	Bachelor degrees awarded	6232 (1967-68)	7000 (1968-69
	Rank	34	35

("Revised" indicates 1969 population estimate after adjustment by U.S. Bureau of the Census to reflect 1970 census.)

It is significant that in 1969, 1.43 percent of entering medical students were from South Carolina which had 1.276 percent of the population and that in 1970 the percentages were 1.55 and 1.275. (It should be noted that in 1971, the entering class at MUSC increased by 42 over 1970, which may indicate another increase in total entering medical students from South Carolina.) While ranking high in entering students per 1000 bachelor degrees, South Carolina ranks low in in the number of bachelor degrees awarded. There appears to be high interest among qualified South Carolinians for medical training, and with increasing numbers of students receiving bachelor degrees, high numbers of applicants could be anticipated.

The Committee does not believe that the probable number of qualified applicants for medical training in South Carolina should be considered a constraint on expanding medical education to meet the needs of the state. There are valid reasons for optimism: the positive attitude of national bodies; the steadily increasing number of applicants to MUSC and general improvement in their qualifications; increasing numbers of baccalaureate recipients from the state's institutions (e.g. 1969-70 total of 7872 bachelors degrees awarded); the decline in interest in Ph.D. programs in science which have competed with medicine for scientifically motivated students; the increase in South Carolinians entering medical school; the improvements in medical education in South Carolina which will make it more attractive; the interest in medical education stimulated by the very problems which this Committee is addressing.

The Committee believes the practice of admitting out-of-state students is desirable to add outstanding out-of-state students and to ensure reciprocity for South Carolina students. Out-of-state admissions should be encouraged to a reasonable degree (Lippard recommended at least 10 percent),(5)

and they of course will add to the pool of applicants.

A related point pertains to how many medical students South Carolina should be furnishing in proportion to its population versus the national population. The Carnegie Report, Higher Education and the Nation's Health, recommends that medical school entrants be expanded to 16,400 by 1978.(6) How many of these should be from South Carolina?

In 1960 1.33 percent of the nation's resident population was in South Carolina. This fell to 1.28 percent in 1970 and is predicted to decline in 1980. Assuming it is 1.23 percent in 1980, with 16,400 medical school entrants nationally, South Carolina should be providing 202. If the experience of 1969 and 1970 continues, the actual number entering medical school will exceed this number, and with improved medical education in South Carolina, a higher percentage will enter medical school in South Carolina.

The figures of 200-250 have been suggested as the maximum number of entering medical students South Carolina should attempt to educate. The Committee believes that a figure of 200-250 is not unrealistic in terms of available students nor in terms of the state carrying its load nationally.

The Cost of a New Medical School

New School versus Existing School

There is evidence that the capital and initial operating costs per additional medical student have proven to be no more, and in some cases less expensive in new schools than in expanding schools. But the best available analysis of this evidence points out the difficulty of arriving at any accurate basis for comparison..." "In the expanding schools true expansion of plant, catching up with neglected maintenance, expansion of hospital and research operation are all intermingled... Any increase in (operational) expenditures in a new school is solely for the benefit of new students whereas the benefits of such expenditures in established schools is distributed over a much larger student body...expenditures are largely for planning in new schools; whereas

they are true operational expenditures in established schools...These comparisons should not be seen as invidious, but only to illustrate the necessity of basing considerations for investment in the creation of new resources for medical education on a much broader range of inputs than simple costs."(1)

Start Up Costs

The University of South Carolina has suggested the following funding pattern for a new medical school at U.S.C.:(2)

Year	Operating Costs
1.	$ 200,000
2.	600,000
3.	1,405,000
4.	1,980,000 (Take in first class of 32)
Total Start Up Costs	$4,185,000

U.S.C. reports that comparative costs at LSU, Shreveport, were $2,818,000 for a first class of 34 in 1969, and at the University of South Florida, Tampa, $4,334,000 for a first class of 24 students in 1971.(3) In all three situations start-up was (or will be) accomplished in temporary space.

In 1967, Lippard suggested a six year period of funding at a total of $4,6 million, including $2 million for the year in which the first class is enrolled.(4)

An analysis of actual costs of 22 new medical schools authorized during the 1960's and admitting the first class by September 1971, shows the following total initial operating costs including the first year of instruction:(5)

Range	$ 294,000 - $15,737,000
Average	3,407,000
Median	2,465,000

The actual costs reported (Shreveport, Tampa, and 22 new medical schools) are not converted to any constant dollar. Considering inflation, the start-up costs suggested by USC appear reasonable, but if the starting year is very far in the future, the costs may be understated.

Capital Costs

U.S.C. projects for the long term, based on an entering class of 96, building and equipment costs on the order of $12 million of state funds.(6) In testimony before the Committee, Dr. Thomas F. Jones, President, University of South Carolina, expressed the opinion that a medical science building costing around $30 million would be required.(7)

Actual expenditures for permanent facilities at new schools during the 1960's are shown below: (8)

	Range	Average	Median
	Site, Site Work, Steam Plant, Etc.		
10 Schools	$5,000- $11,970,000	$3,780,000	$2,170,000
	Basic Science Building, Animal Care and Library		
16 Schools	$3,670,000 $35,270,000	$12,310,000	$9,940,000
	Clinical Science, Hospital and Clinics		
10 Schools	$1,570,000 $113,600,000	$28,120,000	$19,500,000

These expenditures are not converted to any constant dollar. U.S.C. proposes to build on land already available and to use existing hospital facilities so the costs for a basic science building, animal care facility and library would appear appropriate. But costs of $10-$12 million even when inflated to 1971 figures would be considerably less than proposed by U.S.C. It is probable that the medical science building proposed by U.S.C. will reflect some costs charged above to site development and clinical facilities.

The University of South Carolina situation is more analogous to LSU-Shreveport where construction began in Spring 1971 on a medical science facility of approximately 300,000 net square feet costing $30.5 million including equipment.(9) Dr. Jones' estimate of $30 million is in line with statements made by Dr. William M. McCord, President, MUSC, who estimated "the cost of building an undergraduate medical school and nothing else would be $25 to $30 million.

(For an adequate medical school much more would be needed in the way of buildings and equipment.)" Dr. McCord stated that a modern medical center would cost about $150 million comprised of separate buildings at $15 million each: hospital, basic science, clinical science, nursing, dentistry, pharmacy, graduate school, allied health, public health, veterinary medicine, out-patient clinic and specialized hospitals.(10) Since most of these buildings are not applicable in the USC situation, an estimate of $30 million appears reasonable. As with start-up costs, this figure reflects current costs, and could run higher in the future. Design will also affect costs.

Projected Costs

The Committee concludes that a new medical school at U.S.C. would require at least $4.2 million for start-up costs, and approximately $30 million for minimum capital facilities and that these figures could run as high as $5 million for start-up and $40 million for capital facilities depending on timing and design. Once full operation is achieved in a permanent site it is presumed operating costs per student in Charleston and Columbia would be approximately equal.

Teaching Hospital Availability

Within the Columbia area, the South Carolina Department of Mental Health operates 356 general medical and surgical beds and 100 intensive treatment beds. In October 1971 the daily hospital patient population under the Department's control in the Columbia area averaged 5,878; it is estimated that two-thirds were long term.(11) The State Park Health Center has 566 beds, of which 108 are short term; it covers 364 acres. (12) The Veterans' Administration Hospital in Columbia has a capacity of 448 beds of which 385 are included in the current bed census.(13) Richland Memorial Hospital has 604 beds and is at present using 120 for house staff training.(14) Other community hospitals in the area include Baptist, Providence, and Lexington County.

The use of existing hospitals not controlled by the medical school, as

is proposed by U.S.C. (and by MUSC in its Consortium Plan), presents major problems which must be resolved.

Firm written commitments and policies concerning the indefinite use of a facility, totally or in part, as a teaching unit must be developed. Despite the best of intentions at this time, real problems in control of patient admissions and other critical management decisions can be anticipated. It would seem essential to provide for the eventual construction of a teaching hospital wholly owned by the medical school. In this event another $30 million should be added to capital requirements (for a 300-350 bed hospital).

Federal Assistance

Existing and proposed federal programs could significantly assist the funding of a new medical school. One federal program has provided up to two-thirds of the costs of capital construction, and it has been proposed that this be raised to three-fourths. Other assistance is available to help finance the initial operating costs including support for faculty salaries. Even though federal support for collegiate construction has diminished to almost nothing for most types of construction, that for medical school construction has continued to be funded at a high level. There is every reason to be optimistic that if a new medical school is created, significant support could be obtained from federal sources.

The Committee feels constrained to point out that there is nothing automatic or guaranteed about any federal support. On the contrary any support received is contingent upon Congress authorizing a program and then funding it, the Executive Department releasing the funds, and South Carolina obtaining a sufficiently high priority on the application to receive a grant. For the creation of a second medical school the availability of federal funds must be assured.

Location of a Second Medical School

The Committee did not examine any site for a second medical school

other than the University of South Carolina. The Committee believes that a second medical school should be closely associated with a major university, and endorses the University of South Carolina as a logical choice for the location of a second medical school if one is created.

Coordination of Medical Education

The Committee recommends that a coordinative mechanism for the administration of medical education in the state be established. A proliferation of colleges and universities, regional hospitals and an additional medical school all involved in the same endeavor but each making independent decisions could lead to an anarchical administrative process. Competition and duplication and a dilution of scarce funds would more than likely result.

If the General Assembly sees fit to create a second medical school, some limitation on the size of MUSC would appear desirable. The Commission on Higher Education is the logical body to make this determination.

While over-centralization may have some problems it can scarcely have the ruinous results of unfettered decentralization. Competition from a second medical school built and operated under private auspices as for instance in Georgia and North Carolina is good. But when all funds come from the same source some degree of coordination and cooperation is essential.

Graduate Medical Education

There is evidence that MD's tend to locate in states where they take residency training. Apparently young doctors make personal and professional contacts during their training as house staff which tend to hold them in the state as practicing physicians. If the numbers coming to South Carolina as house staff could be increased, there is reasonable expectation that the physician rate could be improved more rapidly (by immediate addition as house staff and subsequent retention as practicing physicians) than by any means short of attracting practicing physicians.

South Carolina ranks low in the number of residency positions offered and filled as shown by the following table from the Appendix to this report:

TABLE 4

NUMBER OF RESIDENCIES OFFERED AND FILLED
SOUTH ATLANTIC REGION
1968-1970

South Atlantic	Pos. Offered 9/1/68	Pos. Filled	% Filled	Pos. Offered 9/1/70	Pos. Filled	% Filled
Delaware	84	53	63	81	56	69
Florida	756	682	87	1,004	917	91
Georgia	659	464	70	722	491	68
Maryland	1,077	977	91	1,286	1,161	90
North Carolina	748	607	81	818	723	88
South Carolina	214	133	62	313	205	65
Virginia	720	552	77	793	663	84
West Virginia	302	202	66	222	139	63
All States & U.S. Territories	42,106	34,794	83	46,005	39,220	71

Attached as an Appendix to this report is an excellent review of Graduate Medical Education in South Carolina prepared by the South Carolina Hospital Association. It reports the progress that has been made in correcting the reasons for the state's poor showing in residency training and notes that "state support for expansion of existing graduate medical education and development of new programs could prove of substantial value in improving the supply of doctors in South Carolina." The Committee agrees and recommends that a state-supported program be established to encourage expansion of residency programs at community hospitals.

While any program aimed at increasing the medical student population will eventually add to the state's physician population the payoff is six to nine years in the future.

(1) It takes at least three and usually four years to complete medical school education.

(2) It takes from three to five years to complete residency training which may be taken out of state.

Because of this fact the quickest and least expensive method of increasing the number of doctors in South Carolina is to develop excellent residency programs in the major community hospitals in the state.

In 1971 there are 300 interns and residents in Greenville, Charleston, Columbia and Spartanburg. Of this number 140 or 46% are graduates from medical schools located outside of South Carolina. (1)

TABLE 5

House Staff, South Carolina Hospitals, Fall, 1971

	INTERNS		RESIDENTS		TOTAL	
	Total In Hosp.	No.Out of State	Total In Hosp.	No.Out of State	Total	Total Out-State
Greenville	12	11	22	13	34	24
Charleston	40	16	193	71	233	87
Spartanburg	1	0	12	10	13	10
Columbia	0	0	20	19	20	19
TOTAL	53	27	247	113	300	140

It is hoped that this situation will continue, but it is also essential that more of the South Carolina medical school graduates choose to continue their specialty medical training in these South Carolina community hospitals. Part of the strategy of the regional campus program in association with the MUSC is to provide an incentive for the undergraduate in his final year of medical school to elect to remain in that community hospital after graduation for his residency training.

Support for house staff at state-supported hospitals is directly related to annual appropriations, and such expansion as may be feasible at state-supported institutions should be reflected in annual requests for appropriations submitted to the General Assembly. But the programs at community hospitals also offer opportunity for expanding the number of residents and the Committee recommends that state funds also be made available to community hospitals.

A state-supported program should reflect the following:

1. Administration should be coordinated by the Commission on Higher Education with a committee from those community hospitals participating in the program.

2. Support should be provided for all the house staff. However additional funds may be made available under conditions of expansion of the program.

3. Support should be provided in specialties determined to be critical in South Carolina.

4. Any non state-supported hospital licensed under appropriate state and national criteria as determined by the administrator may apply for support. State-supported hospitals are not eligible.

5. Support should be based on the number of residents and may be used only for the purpose of education and training of the house staff.

6. A grant should include support for each year of training of at least $5,000 per year per resident after a determination is made by the administrator that the resident is in fact present as house staff.

7. The program should be funded at half level the first year, and full level each year thereafter for a minimum period of 4 years to provide a realistic period for evaluation of the program.

Other Considerations

During the course of its deliberations the Committee recognized that there are trends and activities going on in the health care field which inevitably would have an effect on the matter of health care services and delivery of services to and for the people of South Carolina.

The Committee however has not had the time to investigate these developments but it does feel they are of sufficient importance to mention in this report and to recommend that they be analyzed and revieved by appropriate bodies in the future.

Physician Assistants

The increasingly rapid disappearance of the general or family practitioner has brought on the scene a new person in the health manpower field.

As the general practitioner disappeared from the rural areas and from

the city neighborhoods a void has been created. This void is being studied and evaluated by those interested in the delivery of health care services. Several mechanisms are being experimented with to fill this void.

(1) Neighborhood health centers

Through governmental grants - usually to OEO, neighborhood health centers are being created to serve defined neighborhoods, usually in the poorer sections of a city. These are being staffed by doctors on a part time and full time basis usually from the faculty or house staff of a teaching hospital.

(2) Comprehensive Community Health Care Centers

Again through governmental grants to interested groups of citizens or health care planners, these centers are being established in rural areas. Heavy reliance is placed upon trained professional personnel, including physician assistants to offer primary care to residents of the rural area with back up from specialists in the nearby urban areas.

(3) Mechanization of Physicians Offices

Some of the general practitioners left in rural areas are turning to electronic means of relating their services and equipment to a hospital or teaching center. This method is now used for EKG's, for laboratory procedures, for x-rays and other special procedures. So too they are using nurses and computers in history taking, physical examinations, etc.

(4) Physician Assistants

This group of people are now coming into the medical care field from two directions. First medical schools, hospitals and universities are establishing educational programs to take young students and provide them with a formal educational program designed to accomplish what many general practitioners

accomplished, the provision of primary care to the people of a community. At the present most of these trained young men are working in doctors offices and hospitals.

Secondly, nurses are moving in the direction of assuming some of the particular medical services adaptable to their professions. For instance, even such an institution as Johns Hopkins is training college graduate nurses as midwives. In addition pediatricians are delegating more duties to the nurse trained as a pediatric assistant.

(5) Group Practice, Team Practice and Health Maintenance Organizations

Apparently more young graduates are expressing a desire to team up with other specialists and frequently a corps of trained para-professional people in a multi-disciplinary effort to deliver total care to a defined population.

(6) Hospital Extension Services

Hospitals are moving beyond their walls in an effort to extend the resources which they possess. These resources, personnel, money, supplies, equipment, management expertise, knowlege of needs, and ability in rendering services are increasingly being put to use in order to solve community health care problems. Physicians are absorbed to their fullest capabilities in caring for patients who need their services. The problems of many who are unable to find a doctor in fact do not come to the attention of the doctor, and the hospital as a visible entity in the eyes of the community and as a major health resource itself is being pushed into the position of concern about community needs.

(7) Hospital Emergency Services

As needs arise and as doctors are in short supply the hospital emergency room is becoming a focal point for the provision of

medical services. In fact there is a move to develop a new specialty of Emergency Room Physician with an approved residency program.

(8) There is one final consideration as regards physician needs in South Carolina. At the present time there are 2,000 doctors licensed to practice in South Carolina but who actually live and practice in other states. It would be feasible to attempt to recruit these men back into South Carolina.

In addition, with an expanding population and with a rising per capita income, a campaign to recruit doctors into South Carolina might be considered.

As these non-traditional activities are occuring, without plan, in order to react to the shortages of physicians, this Committee and subsequent interested groups should continually monitor the movements in order to evaluate and re-evaluate the impact they are having on the problem of providing services to the people of South Carolina.

Summary

For over three months this Special Medical Education Committee has diligently studied the problem assigned to it (to advise the Commission as to the educational structure that should be developed to meet South Carolina's requirements for physicians. The need for a second medical school should be considered as well as any other aspects of the training of physicians deemed appropriate).

The Committee is in agreement that South Carolina should strive to attain as its goal the national median of 130 doctors per 100,000 population which the Carnegie Commission has projected for the year 1975.

I. The Committee agrees that it is desirable that this goal be reached as soon as possible but there appears to be no unanimous agreement that this can be accomplished at the Medical University of South Carolina alone.

II. There is agreement that with or without a second medical school there is presently an urgent need to immediately provide training and teaching facilities at Columbia, Greenville and Spartanburg for undergraduate and graduate students. This is necessary to meet needs generated by recent increases in entering class size at MUSC.

III. The Committee is in agreement that the first step must be the prompt establishment of a strong residency training program in these cities supported by a capable, fulltime faculty which must be a part of the MUSC faculty and financially supported by the State of South Carolina.

Students should not be sent from the parent institution to a Regional Health Education Center until the Center has demonstrated the capability to offer an acceptable program. The Regional Center program must be equally as good in every respect as that offered at MUSC and under its direct control and continuing

supervision.

Such programs will provide presently needed educational facilities for undergraduate students and resident physicians. In addition, they will substantially form the nucleus of Health Education Centers as suggested by the Carnegie Commission to upgrade the quality of medical care in the regions served. These Centers should also train para-medical personnel such as nurses, mid-wives, laboratory and X-ray technicians as well as physicians' assistants, and would logically serve as major referral centers for their regions. All should be tied into a statewide medical network.

IV. The Committee, however, is not at this time in full agreement that such a system will in itself provide enough educational facilities for the sharp increase in the number of physicians in South Carolina that appears to be necessary to reach the desired goal. It is an accepted standard that there is a need for approximately 8 beds per entering medical student in a medical school. It appears that MUSC at this time does not have the number of beds recommended to educate the class of 1975 when it enters its clinical training program no later than September of 1973. It is for this reason, if no others were needed, that the Committee recommends the above stated program.

Until definite and satisfactory long-term agreements are confirmed between MUSC and Roper and St. Francis Hospitals in Charleston a majority of the Committee recommends that the number of students accepted in the first year classes at MUSC be limited to the ability of MUSC to provide the necessary number of teaching beds under its control in Charleston and in the Regional Health Education Centers.

At the present time this number cannot be determined with any degree of accuracy. It appears that it will take at least several months before MUSC can

complete the necessary agreements with all hospitals involved. It is only after the number of teaching beds are firmly agreed to that a realistic estimate of the maximum number of entering students can be made. After this has been done, a reasonable answer can be provided as to the need of a second medical school.

If after implementation of these recommended programs it appears that MUSC and the Regional Health Education Centers cannot provide the state with a sufficient number of graduates to reach the goal, then it is obvious that a second medical school as a part of the University of South Carolina will be necessary. If by the fiscal year beginning July 1, 1973, this proves to be the case, then immediate authorization should be provided for planning this new facility if federal funds are available for the major portion of the construction costs. The majority of the Committee believes this additional year should be given to MUSC to bring essential plans and programs to fruition and to demonstrate that it can provide the dynamic leadership in medical education which the state requires, assuming adequate financial support from state government. A minority of the Committee believes a second medical school should be started without delay.

V. Under any circumstances it would appear wise for the state to provide a medical education supervisory mechanism ideally under the Commission on Higher Education to ensure that monies appropriated for all medical education are wisely spent and to prevent costly competition for scarce tax dollars.

VI. An appropriate state agency should immediately be given responsibility to evaluate and analyze the numbers, kinds and distribution of doctors necessary to the well-being of the people of South Carolina.

This agency should create an indepth data-bank of doctors currently practicing and doctors currently in residencies. The state should make every effort to retain these residents in the state of South Carolina.

This agency should also study the new developments in delivery of health services and should continually relate these activities to their accomplishments in meeting the needs of the people of South Carolina for health care services.

VII. This Committee is very aware of the fact that there are many other educational, social and governmental needs that are competing for what appears to be limited tax resources. It is true, however, that a body politic can find the resources to accomplish those goals that its citizens are convinced are necessary for its survival and well being.

FOOTNOTES

The Present Physician Situation

1. Tables 83, 84, Public Health Service, Health Resources Statistics, 1970; Table 1, Annual Estimates of Total Resident Population of States: 1960 to 1970. U. S. Bureau of the Census, Series P-25, No. 460, June 7, 1971.

2. Physician Totals obtained by telephone call from James R. Michael, CHE, to Jean Roback, A.M.A., Chicago. Population estimates from various Statistical Abstract of the United States.

3. Table 9, page 114, Distribution of Physicians in the U.S., 1970. AMA, Chicago. Table 9, page 114, 1969 Volume.

4. C. N. Theodore, G. E. Sutler, J. N. Haug. Medical School Alumni, 1967. AMA, Chicago, 1968. Table A (p.7); Table 3 (p.207)

The Goal

1. Mark S. Blumberg, Trends and Projections of Physicians in the United States 1967 - 2002. The Carnegie Commission, Berkeley, 1971. Pp. 7-12, 50

2. Bobby M. Bowers, Research and Statistical Services Division, South Carolina Budget and Control Board to James R. Michael, October 20, 1971.

3. Table 9, page 114, Distribution of Physicians in the U.S., 1970. AMA, Chicago

4. In 1968-69 and 1969-70, MUSC graduates constituted 62 percent of active non-federal physicians; in 1970-71, 59.2 percent. See appropriate edition of Physicians Registered in South Carolina, State Board of Medical Examiners of South Carolina, Columbia, S. C.

5. Rashi Fein and Gerald I. Weber, Financing Medical Education, An Analysis of Alternative Policies and Mechanisms. A General Report Prepared for the Carnegie Commission on Higher Education and The Commonwealth Fund. McGraw-Hill, New York, 1971, pp. 149-151, 158.

6. Comparison of Physicians Registered in South Carolina, including Supplements for 1969-70 and 1970-71 showed 3.9 percent dropped from the earlier register.

7. Medical Education in the United States 1969-70, Part I., AMA, Table 20, p. 1515.

8. Blumberg, p. 57-58

9. Application from MUSC to U. S. DHEW for funds for a new clinical science building, signed June 29, 1971. p. 143

10. Dr. James W. Colbert, Jr., Vice President for Academic Affairs, MUSC, in conversation with CHE Long-Range Planning Committee on Facilities, April, 1971.

The Cost of Educating a Doctor

1. The Carnegie Commission on Higher Education, Higher Education and the Nation's Health. McGraw-Hill, Hightstown, N.J., 1970, pp. 83-85.

2. Dr. William M. Stewart, Chancellor, LSU Medical Center, during visit of U.S.C. delegation to Shreveport July 29, 1971. Operating cost per student in temporary facilities (with a low enrollment) was $26,000.

3. Crises in Health Care: The Moment of Decision. Submitted to the Committee by the University of South Carolina, September, 1971, p. 16; supplemental material distributed at Committee meeting, October 31.

4. October 20, 1971, Columbia.

5. Questions 6 and 8 of 23 Questions and Answers submitted by Dr. William M. McCord, to the Committee in August, 1971. Hereafter referred to as "23 Questions".

6. Tables VII, VIII, Chapter IV, Goals for Higher Education for 1980, Volume I, South Carolina Commission on Higher Education. (Draft)

The Situation at the Medical University

1. Provided to James R. Michael by E. Glenn Overton, MUSC Registrar

2. Preliminary enrollment data provided by Association of American Medical Colleges, October, 1971.

3. Functions and Structure of a Modern Medical School, joint statement of the AAMC and AMA, 1957; Accreditation in Medicine, issued by the National Commission on Accrediting, November, 1970.

4. George T. Harrell, Planning and Construction of a New Medical School, October, 1967. Revised from a paper originally published in the Journal of Medical Education, p.4. Provided by AAMC.

5. William A. McLees, Director, October 28, 1971, to James R. Michael.

6. Herbert Moore, Director, October 28, 1971, to James R. Michael.

7. V.H.W. Campbell, M.D., Director, October 28, 1971, to James R. Michael.

8. Application from MUSC to U.S. DHEW for federal funds for a new clinical science building. Signed June 29, 1971, p. 160-161.

9. Letter, November 15, 1971, Harrison L. Peeples, Chairman, Board of Trustees, MUSC, to R. Cathcart Smith.

10. Various Questions and Answers About Medical Education submitted to the Committee by Dr. McCord in August 1971, p. 6.

11. Essentials of an Approved Internship, revised to June 30, 1969, AMA, p. 134.

12. Medical Education in South Carolina. Report of consultants to the Commission on Higher Education, 1967, Dr. Vernon W. Lippard, Chairman, pp. 5-6. Referred to as the Lippard Report.

13. South Carolina Capital Improvement Bonds Act, 1970 Amendment.

14. Taylor, Lieberfeld and Heldman, Inc./Jones and Fellers, The Medical University of South Carolina, A Proposal for Physical Plant Development, November, 1970.

15. Report of Committee on Facilities, Goals for Higher Education for 1980, Volume II, South Carolina Commission on Higher Education. (Draft)

16. As recommended to the State Budget and Control Board in September, 1971, by the Commission on Higher Education, total costs would be $18,986,648; $1,681,500 has been funded under the 1970 Amendment to the Capital Improvement Bonds Act; an additional $4,829,247 from state funds was recommended; the balance would come from federal sources.

17. Letter to James R. Michael from J.F.A. McManus, Dean, College of Medicine, MUSC, October 20, 1971.

The Pool of Medical School Applicants

1. Higher Education and the Nation's Health, p. 43.

2. Reference Data on Socioeconomic Issues of Health, 1971, Revised Edition. AMA, p. 99.

3. Data provided by Office of Registrar and Director of Admissions, MUSC, August 31,19

4. Data for 1969 from Appendix 1, Table 2, Ratio of First-Year Medical Students to Sta Population, Bachelor's Degrees Awarded and Per Capita Income: AMA, Medical Educatio in the United States, 1969-70, p. 1550. 1970 data obtained by James R. Michael by telephone from Dorothy Duncan, AMA, Chicago.

5. Lippard Report, p. 15

6. Higher Education and the Nation's Health, p. 43.

The Cost of a New Medical School

1. Cheves McC. Smythe, New Resources for Medical Education: Start-Up Expenditures in Twenty-Three New Medical Schools. Draft document dated August 10, 1971, p. 10, 12, 20.
2. "Proposal for a Medical School in Columbia as Part of the University of South Carolina." Introduced at the Committee meeting on October 31, 1971.

3. Crisis in Health Care: The Moment of Decision, p. 15-16.

4. Lippard Report, p. 25

5. Smythe. Table 3

6. Crisis in Health Care: The Moment of Decision, p. 16. That the $12 million is in state funds is presumed from other data submitted.

7. September 16, 1971, Columbia.

8. Smythe. Table 5

9. Data provided by LSU, Shreveport Medical School staff during visit of USC delegation July 29, 1971.

10. McCord, "23 Questions"; Question 4. Outline of presentation by Dr. McCord, submitted August 20, 1971, third page.

11. Dr. Alexander G. Donald, S. C. Department of Mental Health, to James R. Michael, November 10, 1971.

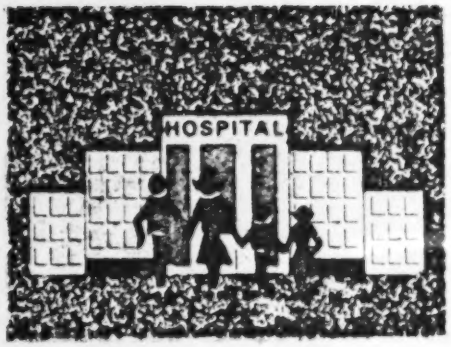
12. Dr. E. Kenneth Aycock, State Health Officer, to Committee.

13. Dr. R. B. Ferguson, V. A. Hospital, to James R. Michael, November 5, 1971.

14. Dr. Dana Mitchell, Richland Memorial Hospital, to Committee.

Graduate Medical Education

1. Compiled by the Office of the Director, Greenville General Hospital System, October, 1971.



health care headlines...

A brief review of trends in hospital and health care in South Carolina.
Published quarterly by the Public Education Project, South Carolina Hospital Association.

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Graduate Medical Education

South Carolina's physician shortage is attributable, at least in part, to the fact that a decade ago, the state's medical college did not rank very high nationally. Its deficiencies included lack of university affiliation and control, inadequate financial support, instability of its administration and failure to develop a strong faculty in some departments.[1] During the past several years, the Medical University has made great strides in correcting these deficiencies and has provided a high level of basic medical education. However, one phase of medical education important to the overall education and retention of physicians in the state has not received enough attention--that of graduate medical education.

Appropriate expansion and upgrading of graduate medical education opportunities in South Carolina have significant potential for improving the state's physician manpower supply. However, the growing importance of graduate medical education has been somewhat overlooked by both public and political leaders in their concern over the need for expanded undergraduate medical education opportunities in the state. This is due, no doubt, to the diffuse location of graduate medical education. It takes place in a number of hospitals and other settings, rather than in a single institution, under a single administration and faculty.

Also, the necessity for extended graduate medical education has developed gradually in response to changes in the health care field and to advances in medical knowledge. Diffuse and gradual evolutionary change frequently escapes public attention:

Trends in Graduate Medical Education

Prior to World War II, graduate medical education consisted primarily of an internship for all graduates and residency programs for the relatively few who wished to specialize. The graduate education period played a very minor role in the overall education of the doctor. Today, according to John S. Millis, Chairman of the American Medical Association's Citizens Commission of Graduate Medical Education, "the system of graduate medical education has become established and now constitutes the larger half of the formal education of the physician."[2]

Many changes are still taking place in the organization of graduate medical education. Most of these changes have been necessitated by the growing specialization of physicians, the rapid advance of medical knowledge and the growing public demand for more physicians' services. For example, the internship, once the mainstay of graduate medical education, is gradually being phased out as a separate entity. The

[1] Moody's Investors Service, Inc. and Campus Facilities Associates, Opportunity and Growth in South Carolina, 1968-1985 (R. L. Bryan Company, 1968), pp. 339-340; and Vernon W. Lippard, M.D., W. Reece Berryhill, M.D. and Joseph C. Hinsey, Ph.D., Medical Education in South Carolina (Washington: U. S. Government Printing Office, 1967), p. 4.

[2] American Medical Association, The Graduate Education of Physicians: The Report of the Citizens Commission on Graduate Medical Education (Chicago: American Medical Association, 1966), v.

clinical clerkship, which is an integral part of the medical school curriculum, now provides the medical students' initiation into the hospital. With the establishment of family practice residencies to prepare primary or family physicians, and the extensive educational requirements for practice in a speciality, almost all medical students now enter a residency. The separate, free-standing internship has become an unnecessary period between the clerkship and the residency.

For this reason, medical educators have wisely recommended the integration of the internship and residency into a single period of graduate medical education called a residency and planned as a unified whole.

Residency training deserves the critical attention of all those concerned with the education of doctors and the doctor shortage in South Carolina, not only because it requires on the average, as many years as undergraduate medical education, but also because it has been noted by many researchers that the location of the residency profoundly influences the ultimate location of the physician.

A recent study of the Carnegie Commission on Higher Education, Financing Medical Education: An Analysis of Alternative Policies and Mechanisms, by Rashi Fein and Gerald F. Weber, in reviewing all recent major research related to physician location, states "the finding most often cited is that a larger portion of individuals with residency training were practicing in the state of their residency training than were practicing in the state of prior residence, state of medical college, or state of internship."[3] Fein and Weber, in their own independent research, studied demographic and social economic factors related to physician location and found increase in population to be of greatest positive significance in attracting physicians to a state. Relative increase in per capita income was also positively related. Fein and Weber are of the opinion that graduate M.D.'s select the location of their residency after deciding where they ultimately wish to practice. If the rate of population growth and increase in per capita income are of positive influence in attracting new M.D.'s, then South Carolina should have experienced noticeable success in attracting residents. Unfortunately, opportunities for graduate medical education in South Carolina have been limited in the past.

[3]Rashi Fein and Gerald Weber, Financing Medical Education: An Analysis of Alternative Policies and Mechanisms (New York: McGraw-Hill Book Co., 1970) pp. 156-157.

Graduate Medical Education in South Carolina

In 1966, South Carolina ranked lowest of 38 states studied by Fein and Weber in terms of residencies offered per one million population. At that time there were 42.3 residencies offered in the state per million population.[4] By 1970, the ratio had nearly doubled with 82.2 residencies offered per million.

Still South Carolina ranks low compared to the other states in the South Atlantic and the nation as a whole.

RESIDENCY POSITIONS OFFERED
SOUTH ATLANTIC REGION

	Positions Offered 1970	Residencies Offered Per One Million Population
Delaware	84	140.0
Florida	868	125.7
Georgia	692	147.2
Maryland	1,169	299.7
North Carolina	839	161.3
South Carolina	222	82.2
Virginia	757	154.4
West Virginia	221	138.1
All States	45,855	220.4

Sources: Preliminary data, Directory of Internships and Residencies, American Medical Association, 1971-72 (to be published November, 1971).

NUMBER OF RESIDENCIES OFFERED AND FILLED
SOUTH ATLANTIC REGION
1968-1970

South Atlantic	Pos. Offered 9/1/68	Pos. Filled	% Filled	Pos. Offered 9/1/70	Pos. Filled	% Filled
Delaware	84	53	63	81	56	69
Florida	756	682	87	1,004	917	91
Georgia	659	464	70	722	491	68
Maryland	1,077	977	91	1,286	1,161	90
North Carolina	748	607	81	818	723	88
South Carolina	214	133	62	313	205	65
Virginia	720	552	77	793	663	84
West Virginia	302	302	66	333	130	63
All States & U. S. Territories	42,106	34,794	83	46,005	39,220	71

Sources: Directory of Approved Internships and Residencies, 1969-70, American Medical Association, Chicago and preliminary data from Directory of Approved Internships and Residencies, 1971-72 (to be published November, 1971).

[4]Fein and Weber, pp. 174-177.

Simple expansion of graduate medical education programs in the state is by no means the total answer. South Carolina has had relatively poor success in past years filling its residencies.

The underlying reasons which accounted for South Carolina's poor showing in residency training in the past were several: the former lack of medical school affiliations for graduate medical education, the lack of directors of medical education in hospitals offering residency programs, the shortage of full time faculty for graduate medical education and relatively lower stipends paid to residents. Steps have been taken in the past three years to correct these deficiencies to the degree possible. All of the ten hospitals involved in residency training now have medical school affiliations, and eight have directors of medical education. Progress has been made toward establishing full time faculties to work in cooperation with those physicians in the community who serve as volunteer faculty in community general hospitals and stipends for residents have been increased in keeping with regional levels.

These improvements have already begun to produce results:

INCREASE IN RESIDENTS ON DUTY
SOUTH CAROLINA TEACHING HOSPITALS
1968-1971

	Residents On Duty 9/1/68	Residents On Duty 8/31/71*
Charleston (5 Hospitals)	127	188
Columbia (2 Hospitals)	22	33
Greenville (2 Hospitals)	15	27
Spartanburg (1 Hospital)	5	14
	169	252

* Preliminary data based on interviews with hospitals

Sources: Directory of Internships and Residencies, 1969-70, American Medical Association, Chicago, 1970 and preliminary data based on interviews with hospitals.

Five hospitals in Charleston are affiliated with the Medical University of S. C. for residency training and are known as a group as Medical Center Hospitals for training purposes. The affiliation of the hospitals in this group with the Medical University of South Carolina is a major affiliation; i.e., the hospitals are used as a major unit in the teaching program of the medical school. Three community general hospitals outside Charleston provide a variety of residency programs and two specialized hospitals in the state provide residencies in one or two specialized fields. These five hospitals are affiliated with a medical school for graduate training only.

The Medical Center Hospitals have been able to attract and retain the largest share of residents in the state primarily as a result of the availability of faculty. The reputation of the faculty and affiliation with a medical school are significant positive influences determining a new graduate's choice of location for his residency. The availability of faculty through the medical school, of course, makes it possible for the Medical Center Hospitals to offer a wider range of residency programs than the others involved in residency training. The effects of this concentration of medical residents in the Charleston area has a lasting effect on physician distribution in the state, substantiating the evidence that doctors tend to remain in the general area of their residency. This factor appears to have had more weight in South Carolina localities than either population growth or increase in per capita income. Although Fein and Weber found in studying factors related to a state's ability to hold its graduates and attract graduates from other states that population increase and increase in per capita income were two items of most significance; apparently within a state the proximity to a medical university and its faculty resources carries greater weight in determining choice of residency location.

LOCATION OF RESIDENTS
AND ACTIVE MD's BY SMSA
COMPARED TO POPULATION
AND PER CAPITA INCOME INCREASE

SMSA	Number Residents	SMSA % Tot.	% Pop. Growth 60-69	% Incr. Per Cap. Income 60-69	Ratio Active MD's In Patient Care/ 100M Pop.
Charleston (5 teaching hospitals)	127	75.1	19.1	101.0	130.0
Columbia (2 teaching hospitals)	22	13.0	23.8	82.5	105.9
Greenville (2 teaching hospitals)	15	8.9	17.1	92.9	99.6
Spartanburg (1 teaching hospital)	5	3.0	10.8	102.1	99.4

Sources: Bureau of Census, Census of Population, 1970, Advance Reports, Final Population and Housing Counts, South Carolina, 1970; American Medical Association, Directory of Internships and Residencies, 1969-70, Chicago, 1970; American Medical Association, Directory of Physicians in the United States, 1970 edition, Chicago, 1971.

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Much could be done to alleviate the present maldistribution of physicians, as well as the shortage, by expanding existing residency programs in community general hospitals and developing new programs in major hospitals in other regions of the state.

The development of family practice residencies in community general hospitals is especially appropriate, since these programs are specifically designed to develop primary physicians to treat the level of illnesses most commonly experienced by the general public, those least likely to be seen in a medical university hospital. The two family practice programs in community hospitals in the state–Greenville General and Spartanburg General and the family practice residency at the Medical University Hospital–place heavy emphasis on the community practice of medicine and on ambulatory care rather than acute inpatient hospital care. Students work in special family practice clinics, and in at least one program, they may be assigned to a private group practice if they elect. As of August 1971, there were 31 residents in family practice in three South Carolina hospitals, a notable number inasmuch as family practice is an approved specialty is only 2½ years old.

A strong point can be made for the location of residency programs in community general hospitals, as well as in Medical Center Hospitals, since community hospitals and the teaching hospitals of medical schools have somewhat different patient mixes and a different length of stay. The university hospital specializes in the more complicated cases. The community hospital by definition provides the level of services most generally needed in the community. Both kinds of learning environments are needed in the teaching of residents. In recognition of this, affiliation agreements between the community hospitals and the Medical University of S. C. contain provisions for rotation of some residents through both institutions to give the resident an opportunity for both kinds of experience.

The affiliation agreements also contain provisions for faculty exchange and other sharing of scarce educational resources. Not only does the existence of an affiliation agreement with a medical school prove to be an asset in recruitment of residents, but it also strengthens the programs at both institutions and enables better utilization of facilities and faculty.

Financing Graduate Medical Education

The cost of graduate medical education is difficult to determine due to the diversity of the programs and the variations in accounting practices. The major costs involved are costs of faculty and residents' salaries.

Over three million dollars was spent on graduate medical education in South Carolina during the past fiscal year. State funds accounted for approximately half of the total expenditure, with state funds being used primarily for those programs based at state-owned institutions. Programs at other institutions are financed in various ways. Federal funds are used to underwrite the cost of the residency program at the Veterans Administration Hospital in Charleston. The community hospitals providing residency training finance their programs primarily through patient revenues, with the cost per patient per day for graduate medical education ranging from $1.08 to $1.27. Some of the costs of developing graduate medical education programs in community hospitals in the state have been underwritten through developmental grants from The Duke Endowment. Since 1968 to the present, $[illegible] has been received from The Duke Endowment for this purpose.

The source of payment for graduate medical education are changing somewhat, due to changes in the financing of medical care. Formerly, much of the medical education in community hospitals was tied to a hospital's indigent care program as residents were primarily assigned to care for charity patients. Accordingly, in those of the four counties in the state in which graduate medical education programs are located that bore the cost of medical education in their reimbursement formulas governing payments to hospitals for services rendered to county-sponsored charity patients. As more and more indigent or medically indigent patients become covered by either Medicare or Medicaid, the source of payment has shifted somewhat from county tax funds to federal or combined federal and state funds. Nonetheless, counties in which there is a teaching hospital still pay sizeable sums for the services of interns and residents. Private patients also pay a cost of the graduate medical education component as part of their total hospital bills. The problem with the present methods of financing graduate medical education is that the payments are related to hospital services received, when actually they represent an educational expense. Unfortunately, the services provided by residents have a definite value for the institution and its patients, and these services should be paid for by the patients who receive them or their respective sponsors. However, the cost of graduate medical education substantially [illegible] of residents' services, and to the extent that the state as a whole benefits from the graduate education of physicians within the state, there should be a partial state subsidy for graduate

medical education costs, regardless of whether the education takes place in a state-owned institution or a community hospital. Further, it would seem highly desirable for the state, in its efforts to increase the state supply of physicians and to correct some of the existing imbalances in physician distribution, to encourage the development of additional residency programs in community hospitals of adequate size and with adequate patient load and mix in regions of the state which currently do not have a teaching hospital.

Summary

Expansion and upgrading of graduate medical education opportunities in South Carolina could do much to protect the state's investigent in basic medical education. A sizeable number of M.D. graduates leave South Carolina for internship and residency training after graduation. This exodus of new medical graduates not only deprives the state of the value of their services but also increases the probability that they will not return to practice in South Carolina after completion of their graduate medical education, since the location of residency has been found to be one of the most significant factors in determining the ultimate location of the physician.

Opportunities for graduate medical education in South Carolina are limited. The ratio of residencies per million population is one of the lowest in the nation and the lowest in the South Atlantic region. Historically, South Carolina has had relatively poor success in attracting graduate M.D.'s into residencies, primarily due to faculty shortages and the former lack of medical school affiliations by community hospitals with graduate medical education programs. These deficiencies are now being corrected and beginning to produce results. The number of residencies filled in South Carolina has almost doubled between 1968 and 1971.

In addition to the establishment of affiliation agreements between the Medical University of South Carolina and community teaching hospitals in the state, the development of residency programs in the area of family practice has been a positive factor in increasing residency training opportunities in the state and making optimum use of community general hospitals in graduate medical education in the state. Major community hospitals, as well as the Medical Center Hospitals, have a role in graduate medical education. Not only should all suitable teaching resources be used, to make optimum use of the expensive facilities, but also both the community hospitals and the Medical Center Hospitals, with their different patient mixes, have unique contributions to make to the total education of future practitioners of medicine.

Graduate medical education is expensive, but a certain portion of the expense is reimbursed through federal, state and county payments for services provided by interns and residents to sponsored patients. The basic cost of graduate medical education, that cost which is not reimbursed by recipients of service, at state and federally-owned institutions is, of course, subsidized through tax funds. In community hospitals these costs are passed on to patients in overall charges. Inasmuch as graduate medical education benefits the state as a whole, a state subsidy for all graduate medical education programs in South Carolina would seem appropriate. Further, state support for expansion of existing graduate medical education and development of new programs could prove of substantial value in improving the supply of doctors in South Carolina.

Graduate medical education now constitutes the larger half of the formal education of the physician. It well deserves a larger share of public concern and support in keeping with its growing importance to the medical care of all South Carolinians.